MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2017/2018

EME2036 –MANUFACTURING AND OPERATIONS MANAGEMENT

(ME)

12 MARCH 2018
9.00 a.m. - 11.00 a.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 5 pages with 4 Questions only .

2. Attempt **ALL** questions . All questions carry equal marks and the distribution of the marks for each question is given .

3. Please write all your answers in the Answer Booklet provided .

QUESTION 1

a) Operations in an organization can be categorized into manufacturing operations and service operations. Discuss the distinction between Manufacturing Operations and Service Operations.

[10 marks]

b) Calculate the productivity for the following cases:

i) 4 workers installed 720 square meters of carpeting in 8 hours. **[3 marks]**

ii) A milling machine produced 68 usable parts in 2 hours. **[3 marks]**

c) From an operations management (OM) perspective, a night hawker can actually perform an operation by using input resources and processes to form their desired outputs. Illustrate (with a suitable flowchart) the possible operations that the night hawker can execute.

[9 marks]

Continued ...

QUESTION 2

a) The numbers of arrival for the past three weeks shown in Table 2a

Table 2a

Week	Patient Arrivals
1	400
2	380
3	411

i. Compute a three week average forecast for arrival of medical clinic patients in week 3. **[3marks]**

ii. If the actual number of patient arrivals in week 4 is 500, what is the forecast error for week 4? **[3marks]**

iii. What is the forcast for Week 5. **[3marks]**

b) Intel Sdn. Bhd., is planning a new warehouse to serve the South of Malaysia, Melaka, Negeri Sembilan and Johor states are under consideration. For each location, annual fixed costs (rent, equipment, and insurance) and average variable costs per shipment (labor, transportation, and utilities) are listed in Table 2b. Sales projections range from 550,000 to 600,000 shipments per year.

Table 2b

Location	**Annual Fixed Costs (RM)**	**Variable Costs per Shipment (RM)**
Melaka	5,000,000	4.65
Negeri Sembilan	4,200,000	6.25
Johor	3,500,000	7.25

i. Plot the total curves for all the locations on a single graph. **[8 marks]**

ii. Which state provides the lowest overall costs? **[3 marks]**

c) An air-conditioner factory produces three different models of air-conditioner unit: the deluxe, the standard and the economy. The deluxe model can be assembled in 1.5 hours, the standard in 1 hour and the economy in 0.75 hours. The assembly area in the factory has 800 staff hours of assembly time available each week.

i. If demand for deluxe, standard and economy units is in the ratio 2:3:2, calculate the time needed to assemble 7 unit air-conditioner. **[2 marks]**

ii. Calculate the number of units can produce in one week. **[3 marks]**

Continued ...

QUESTION 3

a) The processes involved in Operation Management can be linked together to form a supply chain. Illustrate the types of supply chain relationship in figure.

[10 marks]

b) Infineon, a manufacturer of a consumer electronic goods, has five distribution centers in different regions of the country. For one of its products, a high-speed modem priced at RM350 per unit, the average weekly demand at each distribution center is 75 units. Average shipment size to each distribution center is 400 units, and average lead time for delivery is 2 weeks. Each distribution center carries 2 weeks' supply as safety stock but holds no anticipation inventory.

i. On average, how many Ringgit of pipeline inventory will be transit to each distribution center?

[3 marks]

ii. How much total inventory (cycle, safety, and pipeline) does the company hold for all five distribution centers?

[4 marks]

c) Currently a company that designs Web sites has five customers in its backlog. The day when the order arrived, processing time, and promised due dates are given in Table 3. The customers are listed in the order of when they arrived. They are ready to be scheduled today, which is the start of day 190.

Table 3

	Day Order Arrived	Processing Time (days)	Due Date
A	180	20	216
B	182	12	240
C	184	28	256
D	187	24	248
E	188	32	290

i. Develop separate schedules by using the FCFS and EDD rules.

[4 marks]

ii. Compare the schedules on the basis of average flow time and average days past

[4 marks]

Continued ...

QUESTION 4

a) Five S (5S) was one of the techniques developed in Japan to enable just-in-time manufacturing and consists of 5 workplace practices conducive to visual controls and lean production. Discuss all FIVE practices with suitable example for each.

[10 marks]

b) Management commitment to transformation is one of the tools in the administrative function on quality management. Discuss and elaborate THREE points with suitable examples, the aids to promote quality management.

[9 marks]

c) Determine the failure rate for an item that has the test of 6 items terminated at the end of 15h. Two of the items failed after 3 and 5h, respectively. Four items were still operating at the end of 15h.

[6 marks]

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